REMARKS

The present Amendment and Response is submitted in response to the Advisory Action, dated April 18, 2003, where the Examiner has rejected claims 1-5, 7, 9-27 and 42-68. By the present amendment, applicant has cancelled claims 61-68, and amended claims 1, 10, 16, 22 and 53. Accordingly, after the present amendment, claims 1-5, 7, 9-27 and 42-60 are pending in the present application. Reconsideration and allowance of pending claims 1-5, 7, 9-27 and 42-60 in view of the following remarks are respectfully requested.

A. Rejection of Claims 53-60 Under 35 USC § 102(b)

The Examiner has rejected claims 53-60 under 35 USC § 102(b) as being anticipated by Stewart, et al. (USPN 5,761,634) ("Stewart"). Applicant respectfully disagrees.

Claim 53 recites in part: "a plurality of speech data signal encoders, including at least a first encoder using a first speech encoding scheme and a second encoder, wherein said first encoder is a fixed bit-rate encoder incapable of rate determination".

In rejecting independent claim 53, the Examiner states that Stewart discloses that "said first encoder is a fixed bit-rate encoder" at col. 3, lines 17-20, where Stewart reads: "The system provides optimum voice quality and system capacity in that it allows specific encoders to decrease their rate, which improves capacity, as necessary while allowing other encoders to maintain their rates."

Applicant has thoroughly studied the Stewart reference and believes that the Examiner has been misinterpreting the phrase "allowing other encoders to maintain their rates" in Stewart and that this phrase has been taken out of context and does not indicate that encoder(s) in Stewart run at a fixed rate. First, it is noteworthy to discuss Stewart's proposal. According to Stewart:

> A block diagram of the TIA IS-96 standard processing performed by the DSP or other device used to implement the speech encoder (105) is shown in FIG. 2. As shown, speech encoder (105) can be broken down into two main elements: rate determination and encoding. Consider first the rate determination function. In the IS-96 standard, each speech encoder (105) divides its associated PCM signal stream into contiguous 20 ms frames consisting of 160 samples of the source speech waveform. The power level of each frame (which is the zeroth lag R(0) of the autocorrelation function estimate of the frame produced by the autocorrelation estimator (200)) is fed to a bank of comparators (203) which establish which of three monotonic-increasing threshold levels the frame power exceeds. These levels are generated by 2nd order interpolation of a non-linear average of the power level of the speech signal formed by block (201). Note that all these processing steps are completely defined in TIA standard IS-96. If the current frame energy is less than the lowest of the three thresholds, the frame is declared an 1/8 rate frame; if the frame energy lies between the lowest and middle of the thresholds, the frame is declared a 1/4 rate frame; if it is between the middle and highest threshold, the frame is the declared a 1/2 rate frame; and finally, if the frame energy exceeds the highest threshold level, the frame is declared a full rate frame. This final step is performed by comparators (203) and decoder (204) to produce the selected rate (205). (Col. 4, lines 29-55.)
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> It is clear from FIG. 1 and FIG. 2 that, in the prior art, the encoded rate of each forward link speech encoder is determined in isolation. That is the encoded rate of each 64 kbps voice link is determined exclusively by signal processing that speech signal. … [I]t is also clear that in order to operate at the maximum possible rate since each encoder operates in isolation and has no knowledge of the total power (and hence system self - interference) being emitted at the base station antenna (112). Since speech quality must be sacrificed to achieve low mean encoded rates, this implies that overall system speech quality is unnecessarily sacrificed when the system is not at its maximum capacity …. (Col. 5, lines 45-62.)

In other words, according to Stewart, the problem is that each encoder determines the encoding rate in isolation without having any knowledge of the total power, and sacrifices speech quality to achieve low mean encoded rates. Now, the solution that Stewart proposes is as follows:

> The method shown in FIG. 4 can be used to overcome these deficiencies. In FIG. 4, each speech encoder (105) evaluates, for each 20 ms frame, the perceptually weighted error metric (401) produced by encoding the speech

> frame at each of the four candidate rates (more than four rates may be possible in alternate embodiments). This information is then passed back to a supervising rate controller (404). Rate controller (404) then forms a rate/quality table similar to that of FIG. 5, which depicts the perceptually-weighted error produced by encoding at each of the candidate rates for each of the N speech encoders reporting to the rate controller. (Col. 6, lines 14-24.)
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> A simple approach to optimizing the overall voice quality of the cell or sector starts by assuming that all N voice channels have equal transmit power. All of the encoders (105) are placed in the lowest candidate rate and the total transmit power P is calculated by rate controller (404). In this case, P is simply equal to the sum of the rate values for all N encoders, where the rate value for 1/8 rate is 1/8, for 1/4 rate is 1/4, and so on. Rate controller (404) then finds the largest entry in the rate/quality table corresponding to the current candidate rate for any of the N encoders. This is equivalent to identifying the encoder with the worst voice quality (i.e. the largest perceptually weighted error) for the current set of selected rates. The rate for that encoder is increased to the next highest rate, and P is recalculated. This process continues until P exceeds some total power threshold T at which time the procedure terminates. An improved approach would be to apply the procedure to rate/quality table entries which have been weighted by the transmit gain associated with each encoder. This would be extracted from power level block (110). It will be appreciated by one of ordinary skill in the art that the overall effect of this procedure is to reduce power by sacrificing the rate of those encoders which will suffer the least reduction in quality by operating at a lower rate. (Col. 6, lines 25-48.)

Accordingly, rate controller 404 of Stewart is not designed to maintain the encoding rate of any of the speech encoders (105) at a particular rate, but sets the rate of each speech encoder (based on information from each speech encoder (105) regarding the perceptually weighted error metric (401) produced by encoding the speech frame at each of the four candidate rates) in order to transmit as close as possible to maximum allotted system power. Therefore, the word "maintain" as relied upon by the Examiner in Stewart is not a reference to making speech encoders 105 to run at fixed rate. To the contrary, the scheme of Stewart would fail under such circumstances, since rate controller 404 must be able to adjust the rates in order to "maintain the

overall transmitted power to be less than some threshold T." (Col. 6, lines 52-53.) (See, also claim 1 of Stewart.) Accordingly, Stewart is addressing a different system and a different solution than those addressed in the present application.

Applicant believes that, at best, the reference to "allowing other encoders to maintain their rates" refers to "average" or "overall" rate of certain encoders and not "fixing" certain encoders to a particular rate, as there is no support in Stewart, whatsoever, that speech encoders are fixed at a particular rate. To the contrary, Stewart explicitly describes variable rate encoders (col. 3, line 65) in conjunction with variable encoding standard TIA IS96 (col. 4, line 29) and further states that each speech encoder (105) includes rate determination capability (col. 4, lines 31-34.)

Furthermore, claim 53, as amended, recites: "…a fixed bit-rate encoder incapable of rate determination." Assuming, arguendo, that the Examiner still maintains that Stewart discloses fixed bit-rate encoders, applicant respectfully submits that speech encoders (105) of Stewart include rate determination capability, whereas, the first speech encoder of claim 1 is incapable of rate determination. Applicant respectfully submits that this distinction further distinguishes speech encoder of claim 53 over the speech encoders (105) of Stewart.

Accordingly, applicant respectfully submits that claim 53 and its dependent claims 54-60 should be allowed.

B. Rejection of Claims 1, 3-6, 9-16, 18-27 and 42-52 Under 35 USC § 103(a)

The Examiner has rejected independent claims 1, 3-6, 9-16, 18-27 and 42-52 under 35 USC § 103(a) as being unpatentable over Stewart in view of Otani (USPN 6,400,693) ("Otani"). Applicant respectfully disagrees.

Applicant has amended independent claims 1, 10, 16 and 22 similar to claim 53, as discussed above, and respectfully submits that 1, 3-6, 9-16, 18-27 and 42-52 should also be allowed at least for one or more reasons stated above in conjunction with patentability of claim 53.

C. **Conclusion**

For all the foregoing reasons, an early allowance of claims 1-5, 7, 9-27 and 42-60 pending in the present application is respectfully requested. The Examiner is invited to contact the undersigned for any questions.

Respectfully Submitted;
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